

KEEGAN, WERLIN & PABIAN, LLP

ATTORNEYS AT LAW
265 FRANKLIN STREET
BOSTON, MASSACHUSETTS 02110-3113

(617) 951-1400

TELECOPIERS:
(617) 951-1354
(617) 951-0586

January 10, 2005

Mary L. Cottrell, Secretary
Department of Telecommunication and Energy
One South Station, 2nd Floor
Boston, MA 02202

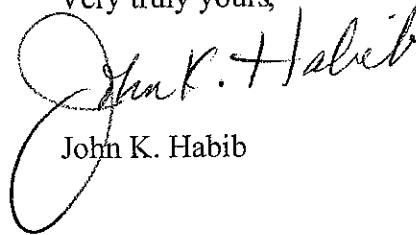
Re: City of Cambridge, D.T.E. 04-65

Dear Secretary Cottrell:

Enclosed please find the Pre-Filed Testimony of Christine L. Vaughan in the above-referenced proceeding.

Thank you for your attention to this matter.

Very truly yours,



John K. Habib

Enclosures

cc: John Shortsleeve, Esq.
William Stevens, Hearing Officer
Sean Hanley, Rates and Revenues Requirements
James Byrnes, Rates and Revenues Requirements
Mark Barrett, Rates and Revenues Requirements

**COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY**

City of Cambridge, D.T.E. 04-65

Direct Testimony of Christine L. Vaughan

Exhibit NSTAR-CLV

1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Christine L. Vaughan. My business address is One NSTAR Way,
4 Westwood, MA 02090.

5 **Q. By whom are you employed and in what capacity?**

6 A. I am Manager of Regulatory Requirements for the regulated operating companies
7 of NSTAR. In this capacity, I am responsible for all regulatory filings concerning
8 the financial requirements of Boston Edison Company ("Boston Edison"),
9 Cambridge Electric Light Company ("Cambridge" or the "Company"),
10 Commonwealth Electric Company ("Commonwealth"; together, "NSTAR
11 Electric") and NSTAR Gas Company (together with NSTAR Electric,
12 "NSTAR").

13 **Q. Please summarize your educational background.**

14 A. I graduated from McGill University in Montreal, Canada in 1990 with a Bachelor
15 of Engineering Degree and from Yale University in New Haven, CT in 1998 with
16 a Masters Degree in Business Administration ("MBA"). Additionally, I have
17 earned the right to use the Chartered Financial Analyst designation.

1 **Q. Please summarize your business experience.**

2 A. I worked as a management consultant for five years at Arthur D. Little and at
3 Charles River Associates, a company that purchased a portion of Arthur D. Little.
4 In this capacity, I assisted clients with financial issues such as acquisition support
5 and asset privatization. I also helped clients develop long-range strategic plans
6 and assisted them with market analysis. Prior to my consulting experience and
7 my MBA, I worked for six years at DuPont and BASF as a development engineer.

8 **Q. Please describe your present responsibilities.**

9 A. As Manager of Regulatory Requirements, I am responsible for directing the
10 preparation of financial data required for regulatory filings and serve as NSTAR's
11 financial requirements witness. My responsibilities currently include, among a
12 variety of other financial services, the preparation of NSTAR Electric's Transition
13 Charge filings and NSTAR's Pension Adjustment Factor.

14 **Q. Have you previously testified before any regulatory body?**

15 A. Yes. I offered testimony at the Federal Energy Regulatory Commission (the
16 "FERC") in Docket No. ER05-69-000 on behalf of Boston Edison relating to the
17 modification of the Boston Edison's Tariff 8 chiefly to permit the inclusion of 50
18 percent of construction work in progress in rate base. I am also sponsoring
19 testimony before the Department of Telecommunications and Energy (the
20 "Department") in NSTAR Electric's respective 2005 Transition Charge filings

1 (see Boston Edison Company, D.T.E. 04-113 and Cambridge Electric Light
2 Company/Commonwealth Electric Company, D.T.E. 04-114), and NSTAR's
3 2005 Pension Adjustment Mechanism filing, D.T.E. 04-118. In addition, I
4 offered the affidavit in this proceeding setting forth the Company's initial position
5 and calculation of the unamortized investment for the streetlights that are the
6 subject of this case (see D.T.E. 04-65 (Vaughan Affidavit, Exhibit NSTAR-1 and
7 Exhibit NSTAR-2)).

8 **II. PURPOSE OF TESTIMONY**

9 **Q. What is the purpose of your testimony?**

10 A. My testimony addresses the issue of determining the correct price to charge the
11 City of Cambridge ("City") for the streetlighting equipment that the City desires
12 to purchase from the Company pursuant to M.G.L. c. 164, § 34A. The Company
13 is an electric company organized under chapter 164 of the General Laws, and it
14 provides electric transmission and distribution service to all retail customers
15 within its service territory in the City of Cambridge. Specifically, my testimony
16 addresses the regulatory basis for determining the proper compensation that must
17 be paid to the Company for the Company's streetlights, and discusses the
18 implications of past Department decisions relating to the pricing of streetlighting
19 equipment.

1 **Q. Please provide some background regarding the City's complaint in this case.**

2 A. In 1997, the Legislature passed the Electric Restructuring Act of 1997 (the "Act"),
3 which extensively restructured the electric utility industry in Massachusetts. Part
4 of the Act authorizes municipalities to acquire the streetlighting equipment within
5 their borders owned by electric companies on the condition that an acquiring
6 municipality compensate the affected electric company for the company's
7 "...unamortized investment, net of any salvage value obtained by the electric
8 company under the circumstances, in the lighting equipment owned by the electric
9 company in the municipality as of the date the electric company receives notice"
10 of the municipality's request to purchase the streetlighting equipment. G.L.
11 c. 164, § 34A(b).

12 On June 1, 2003, the City advised the Company that it desired to purchase the
13 streetlighting equipment owned by Cambridge. Since that time, the Company and
14 the City have met numerous times to discuss various issues relating to the sale.
15 Ultimately, the two parties were able to resolve all issues but one, the price to be
16 paid for the streetlighting equipment. On October 5, 2004, the City filed an
17 Amended Petition with the Department, requesting that it investigate and resolve
18 a dispute as to the correct price to be paid by the City.

1 **Q. What is the Company's position regarding the City's Amended Petition?**

2 A. The Company's position regarding the City's Amended Petition is simple and
3 straightforward. The City is not basing its requested price for the Company's
4 streetlighting equipment in the City on the Company's unamortized investment in
5 the equipment as recorded on the Company's books of account, as required by
6 G.L. c. 164, § 34A(b). The facts supporting the Company's position are clear:

- 7 • As of December 31, 2003, the Company's unamortized investment in
8 streetlighting equipment in its service territory was \$2.218 million,
- 9 • The City is the sole municipality in the Company's service territory,
- 10 • The streetlighting equipment in the Company's service territory includes
11 private, MDC and municipal lights,
- 12 • The City seeks to acquire all of the municipal lights in the Company's service
13 territory, and
- 14 • In accordance with G.L. c. 164, § 34A, the Company has offered to sell the
15 lights to the City for the unamortized investment of those streetlights,
16 approximately \$1.724 million.

17 In my testimony, I will explain why the Company's method of pricing its
18 streetlighting equipment is correct, follows traditional ratemaking principles, and
19 is consistent with G.L. c. 164, § 34A by requiring the purchaser to pay a price
20 intended to fully compensate the Company for its unamortized investment. In
21 addition, my testimony addresses why aspects of the Department's prior decisions
22 governing the purchase of streetlighting equipment are distinguishable from the
23 facts presented in this proceeding. My testimony also addresses the adverse affect

1 to the Company's customers of applying the City's interpretation of the
2 Department's streetlighting precedent to the City's purchase of streetlighting
3 equipment.

4 **Q. Please describe the exhibits included as attachments to your testimony.**

5 **A.** The following exhibits are attached hereto:

6 **Exhibit NSTAR-CLV-1** A single-page exhibit that summarizes the average
7 age of the lights in the Company's service territory,
8 broken down by customer class and in total.

9 **Exhibit NSTAR-CLV-2** A single-page exhibit that corrects the City's
10 calculation of what the Company's streetlighting net
11 book value should be. This version amends the
12 schedule provided in response to Information
13 Request City-1-15 (REV).

14 **Exhibit NSTAR-CLV-3** A multi-page exhibit that quantifies the amount of
15 unrecovered streetlighting investment under the
16 Department's decision in D.T.E. 01-25 if applied to
17 Cambridge.

18 **Exhibit NSTAR-CLV-4** A single-page exhibit that quantifies the amount of
19 unrecovered streetlighting investment under the
20 Department's decision in D.T.E. 01-25 for
21 Commonwealth.

1 **III. CALCULATION OF THE COMPANY'S SALES PRICE**

2 **Q. Please summarize the factors that affect the calculation of Company's sales**
3 **price.**

4 A. Because there is only one municipality in the Company's service territory, i.e.,
5 Cambridge, the Company's accounting books provide the necessary inputs for
6 determining the price of the Company's streetlights. The Company is heavily
7 regulated and its records, which use only Department-approved depreciation rates,
8 are subject to numerous regulatory, financial and accounting reviews. The
9 Company determined its unamortized investment in the streetlighting equipment
10 to be sold to the City by taking the net book value of such streetlighting
11 equipment directly from the Company's accounting books. The only allocation of
12 costs that the Company performed was to allocate its actual accumulated
13 depreciation to each vintage of streetlighting equipment in order to ensure that
14 such accumulated depreciation was attributable to the proper vintage of
15 equipment to be purchased by the City. Each factor is discussed in more depth
16 below.

17 **Q. Are there standards the Company is required to follow when accounting for**
18 **its streetlighting assets?**

19 A. Yes, there are several regulations that govern how the Company accounts for its
20 assets, including streetlighting assets. As an initial matter, NSTAR is a publicly
21 traded company and, as such, is required to follow the accounting
22 pronouncements of the Securities Exchange Commission ("SEC") and the

1 Financial Accounting Standards Board ("FASB"). Since the Company is a public
2 utility under the definition of the Public Utility Regulatory Policies Act of 1978
3 ("PURPA"), it is regulated by the Federal Energy Regulatory Commission
4 ("FERC") and, within Massachusetts, by the Department. Each of these agencies
5 promulgates regulations that specify how the Company must account for its
6 assets. Notably, FERC's accounting regulations are specified in 18 CFR, part
7 101. The Company maintains its books in accordance with all applicable federal
8 and state regulations, and is subject to annual audit by its external auditors,
9 PriceWaterhouseCoopers ("PWC") and periodic audit by the FERC. Further, the
10 Company is required to file standardized annual reports with the Department and,
11 beginning in 2004, quarterly reports with FERC.

12 **Q. Please explain how the Company selects the appropriate depreciation rate in**
13 **a particular year.**

14 A. Contrary to the City's speculation in Exhibit PLC at 6-7, the Company has no
15 discretion in the rate it uses to depreciate its fixed assets. It is the Department that
16 establishes the Company's allowed depreciation rates during a general base rate
17 proceeding. The most recent base rate case filed by the Company was D.P.U. 92-
18 250. In that case, the Company provided a complete depreciation study prepared
19 by an expert witness, and the Department established the depreciation rates for
20 streetlighting equipment that the Company currently uses. A copy of the
21 depreciation study, with all supporting workpapers, and the relevant section of the

1 Department's order in that case, have been provided in the Company's response
2 to Information Request City-1-3.

3 **Q. Please explain how depreciation rates are established for public utilities.**

4 A. There are several key variables that must be considered in establishing a
5 depreciation rate for public utilities. They include but are not limited to: (1) the
6 average age of existing utility plant; (2) the expected remaining life; (3) the
7 current accumulated depreciation balance; (4) expected cost of removal; and
8 (5) assumed salvage values. These factors are all considered by regulators when
9 establishing a depreciation rate that will recover the remaining book value and
10 associated cost of removal, net of salvage, of the Company's investment over the
11 expected remaining service life of the asset class. Thus, depreciation rates are
12 established to recover the cost of the asset from the customers that derive benefit
13 from the asset over its useful service life.

14 **Q. Please describe how the Company calculated its sales price.**

15 A. The Company has calculated its sales price for the streetlighting equipment
16 requested by the City by first determining the net book value of all its
17 streetlighting equipment. This is a straightforward exercise and is done by direct
18 reference to the Company's books of account as of the valuation date. FERC
19 Account 373, Street Lighting and Signal Systems, represents the original installed
20 cost of its streetlighting equipment by vintage year. A sub-account of FERC

1 Account 108, Accumulated Provision for Depreciation of Electric Utility Plant,
2 contains the total accumulated depreciation for streetlighting equipment. The
3 difference between these two values is the Company's net book value (or
4 unamortized investment) for all streetlighting equipment.

5 Because the City is seeking to buy most (86 percent), but not all, of the
6 Company's streetlighting equipment, the Company went a step further and
7 assigned a portion of the accumulated depreciation to each vintage-year lights in
8 order to account for the relative age of the equipment being purchased. The
9 Company's PowerPlant fixed capital accounting system performs this allocation
10 through a process based on Iowa curves and the result is the net book value of
11 streetlighting equipment by vintage year. The Company's detailed property
12 records provide the vintage year and the customer of record of each existing light.
13 Using this data, the book value of individual vintage years was then allocated by
14 customer class based on the number of lights. The net book value of the
15 Company's streetlighting equipment established the price the Company has
16 requested the City to pay for the equipment. By adopting the result of the
17 Company's allocation procedure (Chernick Testimony at 11-12), the City
18 implicitly used the same methodology.

1 **Q. For purposes of calculating unamortized investment, is a company's net book**
2 **value the equivalent of the company's unamortized investment?**

3 A. Yes, the two terms are synonymous. The City has inappropriately attempted to
4 suggest that there is a distinction between the two terms in the City's responses to
5 Information Requests City-1-12 and City-1-16. The City's witness implies that
6 unamortized investment does not equal net book value because: (a) plant is being
7 transferred, not removed; (b) the Company may be using a composite distribution
8 plant depreciation rate; and (c) the Department may have ordered a transfer, or
9 allocated amounts among sub-accounts. As discussed further in Section IV, the
10 transfer or sale versus removal of property does not cause a difference between
11 net book value and unamortized investment. Also, the Company does not use a
12 composite distribution plant depreciation rate. Any transfers or allocations are not
13 an issue here, and if they did apply, they would apply equally to both unamortized
14 investment and net book value. Accordingly, for purposes of determining the
15 appropriate sales price of streetlights under G.L. c. 164, § 34A, there is no
16 difference between the terms "unamortized investment" and "net book value" and
17 the Company uses the terms interchangeably.

18 **Q. Has the Company's calculation of its unamortized investment in**
19 **streetlighting equipment in the City been provided in this case?**

20 A. Yes. In the Company's response to the City's Petition, the Company provided
21 Exhibit NSTAR-1, based upon a December 31, 2003 valuation date, and Exhibit

1 NSTAR-2, based upon a September 30, 2004 valuation date. On these Exhibits,
2 the data in Columns A through C, and the total of Column D are taken directly
3 from the company's accounting systems. Column D also shows the allocation of
4 this total the accumulated depreciation to vintage years. Column E is the net book
5 value, (Column C – Column D) detailed by sub-account for each vintage year.
6 Column F is the total of the book value for all streetlighting equipment by
7 vintage. Each year's total is then multiplied by the percentages in columns G, H
8 and I to derive the values in columns J, K and L. Thus, the total book value on
9 Exhibit NSTAR-1, column F, line 284 of \$2,218,498 has been allocated to
10 Private, MDC and City lights. The \$1,724,206 total in column L is the sales price
11 that the Company presented to the City as of December 31, 2003. The Company
12 updated these values as of September 30, 2004 in Exhibit NSTAR-2. As of that
13 date, the total book value of the Company's streetlights was approximately \$2.067
14 million, and the sales price for the streetlighting equipment sought by the City is
15 approximately \$1.625 million. The resulting key figures are summarized in the
16 table below:

	NSTAR-1 Dec. 31, 2003	NSTAR-2 Sept. 30, 2004
Cost	\$3,784,027	\$3,789,462
Accumulated Depreciation or Reserve	\$1,565,529	\$1,722,230
Net Book Value (from Company books)	\$2,218,498	\$2,067,231
Derived net book value from allocation procedure:		
(a) Private	\$228,598	\$213,412
(b) MDC	\$265,697	\$229,108
(c) Municipal	\$1,724,206	\$1,624,711

1

2 **Q. Why did the Company use Iowa curves to allocate the accumulated**
3 **depreciation balance?**

4 A. The use of Iowa curves is a well-established procedure in utility regulation. The
5 Department has used Iowa curves in the past for establishing depreciation rates
6 for regulated companies. See, e.g., Fitchburg Gas & Electric Light Company,
7 D.T.E. 98-51, at 69-74 (1998); Boston Gas Company, D.P.U. 93-60, at 177
8 (1993); Cambridge Electric Light Company, D.P.U. 92-250, at 58 (1993). As the
9 Company explained in response to Information Request City-1-29, Iowa curves
10 generally serve two purposes; they provide a reasonable guideline of how long a
11 particular class of assets will remain in service, and they provide a statistical
12 method of allocating accumulated depreciation to assets by age. In this case, it is
13 the latter purpose that is significant. The use of the Iowa curves in the Company's

1 calculation is only for the purpose of associating the total streetlighting
2 accumulated depreciation with the vintage years; the remainder of the Company's
3 determination of unamortized investment is a direct reflection of the Company's
4 actual financial books of account. The resulting book value in each vintage year
5 is allocated between City, MDC and private lights to accurately determine the
6 value of the City's lights. If the Company had simply allocated the net book
7 value of streetlights by the number of lights without using Iowa curves, the result
8 would have raised the City's price as of December 31, 2003 to \$1,907,908.62.¹
9 When compared to the \$1,724,206.33 value (see Exhibit NSTAR-1, Line 284, Col
10 L) calculated by the Company using the Iowa curves to allocate accumulated
11 depreciation, the City benefits by over \$180,000 from the Company's use of Iowa
12 curves to allocate accumulated depreciation.

13 **Q. Has the Company determined the relative age of its streetlights?**

14 A. Yes. In its early discussions with the City, a question arose as to the relative age
15 of the lights the City wanted to purchase and the remainder of the lights. At that
16 time, the City stated they believed their lights were largely the older lights, and
17 thus, should have a lower average net book value. In Exhibit NSTAR-CLV-1, the
18 Company calculated the weighted-average age of its lights both in total and by

¹ Calculated as follows: \$2,218,498.40 from Exhibit NSTAR-1, Line 284, Column E, times the percent of City lights (86 percent).

1 customer class. The weighted-average age of all the Company's existing
2 streetlights is 12.6 years. The weighted-average age of the lights the City seeks to
3 purchase is 12.2 years. From this, I conclude that, as a whole, the age of City's
4 lights on average is essentially the same as the total population of the Company's
5 lights and no discount to net book value is appropriate.

6 **Q. Has the relative age of the streetlights been factored into the determination of**
7 **the sales price?**

8 A. Yes. Since the Company has allocated accumulated depreciation to individual
9 vintage years and since the Company knows the vintage of each of the lights the
10 City seeks to buy, the Company's calculation has properly determined a sales
11 price that factors in the relative age of the assets being sold. It should be noted
12 that, as explained above, the Iowa curves serve only to provide a basis for
13 allocating the actual total accumulated depreciation to vintage years for the
14 purposes of determining the value of the lights and they do not have an effect on
15 the level of the accumulated depreciation itself. Given that the relative age of the
16 City's lights is essentially the same as the total population of lights, any
17 reasonable allocation method will produce approximately the same end result
18 even if it shifts more accumulated depreciation to the older or newer lights. Thus,
19 the City's contention that the Company's allocation method does not allow older
20 units of property to have a negative book value (see Exhibit PLC at 7) is not only
21 wrong, but also of no consequence. As explained in the Company's response to

1 Information Request DTE-1-11, the Company's allocation method does, in fact,
2 permit older units of property to have a negative book value. One need only to
3 look at Exhibit NSTAR-2, lines 1 through 17, column E for confirmation of that
4 fact.

5 **IV. CITY'S POSITION**

6 **Q. Please summarize the City's position.**

7 A. The City has attempted to determine a more advantageous price for the
8 Company's streetlighting equipment. As I will explain below, the City's
9 calculation has failed to consider the impact of all factors affecting net book
10 value. In particular, the City's calculation includes a major omission, i.e., the
11 effect of net salvage value. The City's arguments on why it omitted net salvage,
12 or assumed it to be zero, are false. The City's approach also conflicts with a basic
13 tenant of utility regulation, that cross-subsidization issues should be avoided so
14 that the class of customers that benefits from an asset should be the same class
15 that pays for the cost of that asset.

16 **Q. What price has the City proposed to pay for the streetlighting equipment it**
17 **wishes to buy?**

18 A. The City believes that it should be able to buy 86 percent of the Company's
19 streetlighting equipment for \$876,491 as of December 31, 2003 (see Exhibit

1 CAM-5), a value that is only 40 percent² of the Company's net book value at that
2 date.

3 **Q. Is this reasonable?**

4 A. No. There is a huge discrepancy between the City's calculation of \$876,491 and
5 the Company's price of \$1,724,206. Given that the relative age of the City's
6 lights is essentially the same as the population as a whole, this discrepancy
7 indicates a fundamental error in the City's calculation.

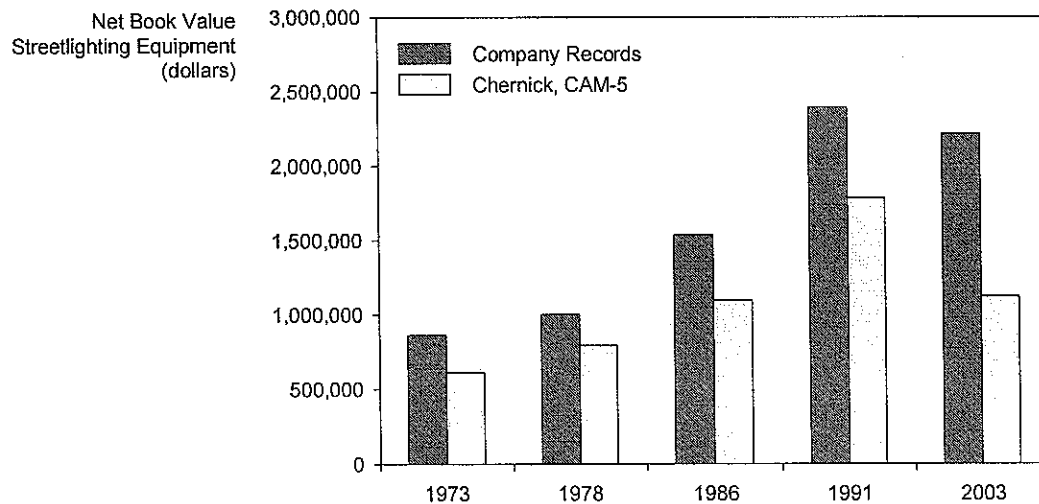
8 **Q. Is the City's calculation correct?**

9 A. No, we have determined that the City's calculation is not correct. The City's
10 calculation attempts to reconstruct the Company's books specific to Cambridge
11 Streetlight Equipment over a 60-year time frame. Because there is only one
12 municipality involved in the Company's service territory and there are no
13 allocation issues across municipalities, it is easy to verify if this calculation is
14 correct by comparing the City's proposed purchase price to the Company's books.
15 By comparing the City's calculation to the Company's books as of December 31,
16 2003 and the Company's books at the time of the Company's last four base rate
17 cases, it is clearly revealed that the City has substantially miscalculated

² This amount is calculated as follows: \$876,491 (Exhibit CAM-5) / \$2,218,498 (Exhibit NSTAR-1, Column E, line 284) = 39.5 percent.

1 accumulated depreciation. The Company provided these data in response to
2 Information Request City-1-15 and are visually demonstrated in Figure 1 below.

3 **Figure 1 – Comparison of Chernick Net Plant Values
To Company Records**



12 **Q. What is wrong with the City's calculation?**

13 A. The City has failed to correctly determine the accumulated depreciation relating
14 to the Company's investment in streetlighting equipment. In its calculation, the
15 City appears to believe that the only factor that affects the accumulated
16 depreciation balance is the depreciation expense and retirements recorded in a
17 year. However, the City's witness, Mr. Chernick, responded to Information
18 Request NSTAR-1-10 by readily acknowledging that other factors, including net
19 salvage, also affect the accumulated depreciation balance. As the Company

1 explained in its response to Information Request City-1-9, the determination of
2 accumulated depreciation is:

$$3 \quad DR_e = DR_b + (AGP * Rate) - RP - COR + SAL$$

4
5 Where: DR_e = Depreciation reserve ending balance
6 DR_b = Depreciation reserve beginning balance
7 AGP = Average Gross Plant
8 Rate = Department approved depreciation rate
9 RP = Original Cost of plant retired in the period
10 COR = Cost of Removal related to retired plant
11 SAL = Salvage value of plant retired

12 As far as the Company can determine, the City's Exhibit CAM-5 has recognized
13 only two of these factors; annual depreciation ($AGP * Rate$),³ and Retired Plant
14 (RP) in its calculation. The City's calculation of net book value appears to have
15 ignored the effect of Cost of Removal and Salvage on accumulated depreciation.
16 FERC instructions relating to these two components are specific:

17 "At the time of retirement of depreciable electric utility plant, this
18 account shall be charged with the book cost of the property retired
19 **and the cost of removal and shall be credited with the salvage**
20 **value and any other amounts recovered..."**

21 FERC Chart of Accounts 18 CFR, Part 101, Account 108, emphasis added. By
22 ignoring these two components, the City has significantly understated the net
23 book value of streetlighting equipment.

3 Even at that, in an analysis done by Mr. Chernick on Attachment PLC-3, and in his testimony on page 6 beginning at 23, the City questions if the Company is using the correct Department-approved depreciation rates. The Company's response is unequivocal, the Company uses only Department-approved rates in determining annual depreciation expense.

1 **Q. What is net salvage value?**

2 A. Net salvage value is a term used to describe the combination of the cost of
3 removal and the salvage proceeds obtained from the removed equipment. It is
4 defined as "Gross salvage less cost of removal" where gross salvage is defined as
5 "The amount received for property retired, less any expenses incurred in
6 connection with the sale or in preparing the property for sale; or if retained, the
7 amount chargeable to materials and supplies."⁴ Removal costs are defined as "the
8 costs of disposing the plant, whether by demolishing, dismantling, abandoning,
9 sale or other."⁵

10 Historically, net salvage has not been an insignificant cost for the Company and
11 its streetlights. From 1989 to 2003, the Company has incurred \$821,275 in net
12 salvage value for retirements totaling \$1,581,153. On average, net salvage is
13 negative 52 percent of retirements.

14 **Q. How does net salvage value become negative?**

15 A. Whenever the cost of removal is greater than the salvage value that is obtained,
16 the net salvage amount is negative. The cost of removal is typically greater than
17 the salvage received for the scrap material. For Cambridge, in particular during

⁴ Glossary of Electric Utility Terms, Prepared by the Statistical Committee of Edison Electric Institute, 1991, p. 49.

⁵ "Introduction to Depreciation and Net Salvage of Public Utility Plant and Plant of Other Industries", Edison Electric Institute, May 2003, page 128.

1 the last decade, the cost of removal has been approximately four times greater
2 than the value of gross salvage. Therefore, streetlight equipment in Cambridge
3 has had negative net salvage values.

4 **Q. Do you believe that the City has considered the effect of negative net salvage**
5 **value on its calculations of the price to be paid for the Company's**
6 **streetlights?**

7 A. No. Although the City appears to acknowledge in its responses to Information
8 Requests NSTAR-City-1-10 and NSTAR-City-1-15 that net salvage value should
9 be reflected in depreciation rates and in accumulated depreciation, it does not
10 appear in Mr. Chernick's schedules for his calculation of a proposed streetlighting
11 value. In addition, the City's witness provides incorrect or misleading statements
12 that would suggest that inclusion is not necessary or that the value is negligible.
13 The witness stated the following:

- 14 • "streetlighting net salvage is often reported as zero; this appears to be
15 NSTAR's practice at Boston Edison and CommElectric" (Information
16 Request City-1-14);
- 17 • "Costs that could be characterized as removal costs may alternatively be
18 characterized as part of the cost of installing replacements, allowing net
19 salvage to be zero" (Information Requests City-1-14 and City-1-15); and
- 20 • "the Company will not obtain any salvage value (since the plant is being
21 transferred to the City, not removed)..." (Information Request City-1-12).

22 All of these are wrong or misleading, as I will describe below.

1 **Q. Is net salvage generally zero for streetlighting equipment?**

2 A. No. As I mentioned above, Cambridge's net salvage has been on average
3 negative 52 percent of retirements. Both Boston Edison and Commonwealth also
4 have negative net salvage for streetlighting equipment. For Commonwealth, net
5 salvage costs amounted to negative 14 percent of retirements from 1992 to 2002.

6 **Q. Does the Company account for removal costs as part of the cost of installing**
7 **replacements?**

8 A. No. The Company cannot ignore actually incurred costs to remove and dispose of
9 retired equipment. It properly accounts for actually incurred removal and net
10 salvage costs in FERC Account 108, Accumulated Provision for Depreciation of
11 Electric Utility Plant, in accordance with FERC regulation. Additionally, there is
12 different tax treatment for cost of removal versus cost of additions that require the
13 Company to account for each item separately and correctly.

14 **Q. Is the Company charging the City for net salvage costs that ultimately the**
15 **City will bear when it retires its purchased streetlighting equipment in the**
16 **future?**

17 A. No, of course not. The City will not be paying for salvage costs for equipment
18 that is transferred. With the Company's calculation, the City is fully credited for
19 any salvage costs reflected in the accumulated depreciation for existing
20 equipment. However, the Company must recover any net salvage costs that it has
21 actually incurred in the past. Therefore, these costs must be charged back to
22 accumulated depreciation. Quite simply, the Company's approach ensures that all

1 components of unamortized investment are considered in the sales price, while the
2 City's approach does not.

3 **Q. Please explain how the Company credits the City for any salvage costs for**
4 **existing equipment.**

5 A. If negative net salvage is included in the accumulated depreciation account, then
6 typical utility accounting ensures that the City does not pay for any salvage costs
7 for existing equipment. The depreciation rates that the Company uses essentially
8 cover two costs: (1) the cost of the addition of the equipment; and (2) the cost of
9 removal and salvage of the equipment. The combination of these two costs is
10 recovered over the life of the asset. This implies that the cost of additions is
11 recovered after the Company has already incurred the cash cost and, conversely,
12 the Company is prepaid for the amount of expected net salvage to occur during
13 removal. Once the equipment is removed by the Company, the prepayment of net
14 salvage should equal the cost of removal and salvage, assuming that the rates
15 were set perfectly. If the asset gets sold before it is retired, the accumulated
16 depreciation account related to the asset will be high, as it includes depreciation
17 from the original cost of the equipment and estimated net salvage. Since the asset
18 is retired at original cost, the difference is a credit that is equal to the amount of
19 prepayment of estimated net salvage.

20 An example may help to clarify this explanation:

Assume

- Cost of Equipment = \$100,000
- Estimated negative net salvage of 25%
- Estimate 10 year life

$$\begin{aligned}\text{Annual depreciation} &= (\text{Cost of Equipment} + \text{Estimated net salvage})/\text{Life} \\ &= (\$100,000 + \$25,000)/10 = \$12,500 \text{ per year}\end{aligned}$$

Year	Cost	Accumulated Depreciation	Unamortized Investment
1	100,000	12,500	87,500
5	100,000	62,500	37,500
10 before cost of removal	100,000	125,000	-25,000
10 after cost of removal	100,000	100,000	0

Examine year 10 before cost of removal. At this point, the equipment is fully depreciated. The ten year's worth of depreciation covered both the \$100,000 initial cost and the \$25,000 estimated net negative salvage value. Since the removal has not yet taken place, the net book value is negative \$25,000, essentially a credit for the full amount of net salvage pre-payment. The same logic applies for an earlier sale. Looking at year 5, the equipment is half depreciated. If one were to recover only the initial cost in the depreciation rates, we would expect the equipment to have a net book value of \$50,000 at that time ($50\% * \$100,000$). Since the depreciation rates did include a net salvage "pre-payment", \$62,500 was actually charged to accumulated depreciation. If the

1 equipment were removed at this point, the net book value would be \$37,500. The
2 difference between \$50,000 and the \$37,500 is equal to a complete credit of
3 \$12,500 of the total amount of net salvage "pre-payment". Therefore the City is
4 not charged for the cost of removal for equipment that is being transferred. In
5 fact, the City is getting a direct credit for the negative net salvage component of
6 depreciation.

7 **Q. Has the City properly accounted for net salvage value in its calculation of the**
8 **purchase price for the equipment?**

9 **A.** No. The City inappropriately excludes negative net salvage in its attempt to
10 "reconstruct the books" of the Company to arrive at a price for the Company's
11 streetlighting equipment. For example, in Exhibit CAM-5 in 1947, \$53,139 worth
12 of streetlighting equipment was added to Cambridge's service territory. As of
13 December 31, 2003, only \$19,161 of 1947 equipment remained in service
14 (Exhibit NSTAR-1, lines 15-17, Col C). This means that \$33,978 worth of
15 equipment was removed over time from 1947 to 2003. The City did not account
16 for any negative net salvage costs that the Company incurred for this removal.
17 The effect of ignoring this cost is that the City's accumulated depreciation amount
18 over time is higher, and consequently, the net plant balance is lower. If you add
19 up the Company's estimates for negative net salvage from 1942 to 2003, the

1 effect is to increase the City's calculation of net plant balance by \$1,048,467.⁶
2 Note that this is all for equipment that has already been removed from service. It
3 does not include costs for equipment that the City intends to purchase.

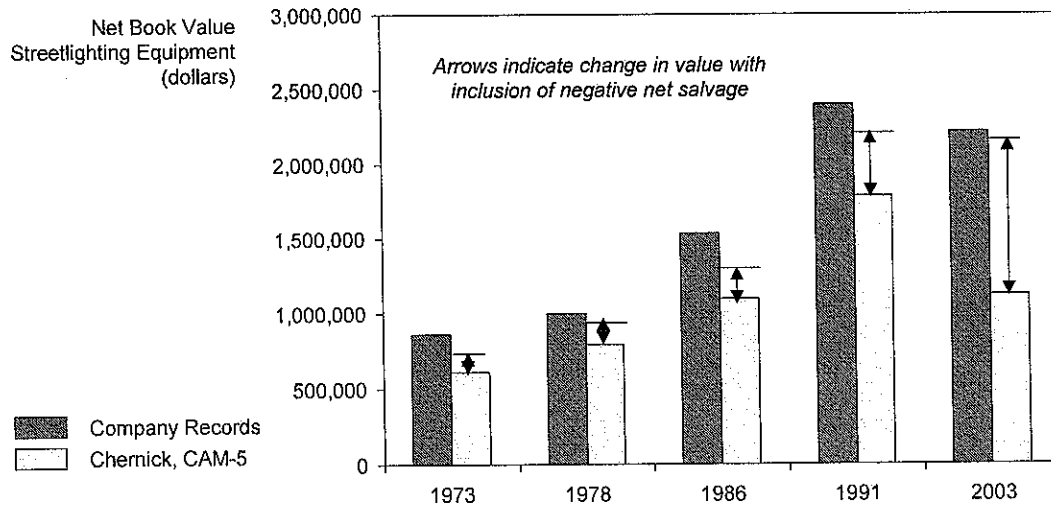
4 **Q. Can you correct the City's calculation?**

5 A. Yes. The Company has prepared Exhibit NSTAR-CLV-2, a corrected version of
6 the City's Exhibit CAM-5, which adds a column to recognize the negative net
7 salvage value relating to its streetlighting equipment. The data in column 8 for
8 the years 1989–2003 are actual amounts of negative net salvage as recorded on
9 the Company's records. For expediency sake, the data for earlier years is a simple
10 15 percent of retirements. This 15 percent is the same rate the Department
11 directed the Company to use for negative net salvage when the Department
12 established the Company's current streetlighting depreciation rates in D.P.U. 92-
13 250.⁷ The results of this corrected calculation show that the City's determination
14 of net book value would have been \$2,158,145 as of December 31, 2003, if the
15 City had properly included negative net salvage. Figure 2 below shows the effect
16 of correcting the City's calculation for negative net salvage with data from
17 Exhibit NSTAR-CLV-2 and Information Request City-1-15.

6 See Exhibit NSTAR-CLV-2, sum of Column 8.

7 A copy of the Department's order relating to depreciation rates has been provided in response to Information Request City-1-3.

**Figure 2 – Effect of Including Negative Net Salvage
On Chernick's Net Plant Values**



The corrected 2003 value of \$2,158,145 correlates closely, being only 2.7 percent lower than the Company's actual net book value as of December 31, 2003 of \$2,218,498 as shown on Exhibit NSTAR-1. The lower theoretical result in the corrected City's calculation varies from the actual amount on the Company's books because of minor imprecision in actual annual depreciation, the net effect of early and late retirements, the effect of arbitrarily choosing the beginning accumulated depreciation balance to be exactly half of the gross balance in 1941 and other small miscellaneous effects. Regardless, however, the Company's actual net book value for its streetlighting equipment is the proper figure to use as the price of the equipment for sale, instead of a theoretical value derived from other sources.

1 **Q. Why is the City's apparent misunderstanding of the effect of net salvage**
2 **value relevant?**

3 A. Because by ignoring the fact that the Company has incurred negative net salvage
4 value relating to the streetlights that the City will purchase, the City has
5 significantly underestimated the Company's unamortized investment in that
6 equipment. Indeed, the differential between the City's price for the equipment
7 and the Company's price demonstrates that the treatment of negative net salvage
8 value is crucial in determining the proper price for the Company's streetlights.
9 Under the City's calculation, the Company would not fully recover its
10 unamortized investment in streetlighting equipment to be sold to the City as
11 required pursuant to G.L. c. 164, § 34A. If this were the case, in order to keep the
12 Company whole, other customers must pay for the difference. As a result, the
13 Department must consider whether causing such cross subsidies is the most
14 economically efficient and appropriate way of ensuring that the Company is fully
15 compensated. Consistent with the Department's ratemaking precedent, we
16 believe that cost recovery is best achieved by following principles of cost
17 causation, i.e., by seeking recovery from those customers who caused the costs to
18 be incurred – which, in this case, would be from the City directly.

1 **V. PAST PRECEDENT**

2 **Q. Please explain NSTAR Electric's experience selling streetlighting equipment**
3 **to municipalities since the passage of the Act.**

4 A. Since the passage of the Act in 1997, approximately one-half of the 80
5 municipalities within NSTAR Electric's service territory have purchased their
6 streetlights. In the vast majority of transactions, NSTAR Electric and the
7 purchasing municipalities were able to agree on the proper purchase price for
8 NSTAR Electric's streetlighting equipment. However, in several instances,
9 disputes over the proper purchase price resulted in Department action to resolve
10 the dispute.

11 **Q. Please identify previous Department orders relating to the pricing of**
12 **streetlighting equipment.**

13 A. In 1998, the Department considered streetlighting issues in a case involving the
14 Company's affiliate Boston Edison. Petition of the Towns of Acton and
15 Lexington, D.T.E. 98-89 (1998). In 2001, the Department addressed
16 streetlighting issues as they related to a different affiliate of the Company,
17 Commonwealth. Joint Petition of the Towns of Edgartown, Harwich and
18 Sandwich, D.T.E. 01-25 (2001). In 2002, Boston Edison was a party to a case
19 involving the City of Waltham in which the price for streetlighting equipment was
20 at issue. City of Waltham, D.T.E. 02-11 (2002). In each of these cases, the
21 Department decided specific narrowly defined issues under the applicable set of

1 facts relating to the pricing of streetlights for those municipalities.⁸ The
2 Department did not establish a generic pricing formula in these cases. I will
3 provide a more in-depth explanation of the issues in each of these cases below.

4 **Q. Please discuss the primary issues in D.T.E. 98-89.**

5 A. In D.T.E. 98-89, the Department resolved a dispute regarding Boston Edison's
6 depreciation rate from the period 1991 through 1998. In D.T.E. 98-89, there were
7 four questions before the Department: (1) the extent of the equipment that must be
8 sold; (2) the proper valuation price of that equipment; (3) the appropriate
9 distribution service tariff; and (4) the appropriateness of pole attachment fees.
10 Only item two is in dispute in the current case. Because Boston Edison did not
11 use a streetlighting equipment-specific depreciation rate for those years and it did
12 not maintain its books on a community-by-community basis, it had proposed to
13 use a composite distribution plant depreciation rate to determine its unamortized
14 investment in streetlighting equipment to be sold to Acton and Lexington. The
15 Department disagreed and required Boston Edison either to: "...(1) use the
16 streetlighting equipment depreciation rate proposed by the Towns; (2) allocate the
17 streetlighting-specific depreciation rate from the last depreciation study to the
18 gross streetlighting plant in service, net of accumulated depreciation for the period

⁸ Currently, the Department is considering streetlight issues in a case involving Massachusetts Electric, D.T.E. 03-98.

1 from the last depreciation study; or (3) perform a depreciation study, and allocate
2 a streetlighting-specific depreciation rate to the gross streetlighting plant in
3 service, net of accumulated depreciation, for the period from the last depreciation
4 study.” Order at 4. In order to compromise on a dispute, Boston Edison chose to
5 comply with the Department’s order by adopting option (1), and applied a
6 depreciation rate that was offered by Lexington and Acton, rather than a rate that
7 was tied specifically to Boston Edison’s books.

8 **Q. Please discuss the primary issues addressed by the Department in**
9 **D.T.E. 01-25.**

10 A. In D.T.E. 01-25, the primary issue revolved around the lack of municipal-specific
11 streetlighting data. Specifically, Commonwealth proposed to determine its
12 unamortized investment in the streetlighting equipment being purchased by
13 Edgartown, Harwich and Sandwich (the “Towns”) by calculating a depreciation
14 reserve applicable to streetlighting equipment in its entire service territory,
15 allocating the system-wide streetlighting reserve to the Towns purchasing the
16 equipment, and then subtracting it from the original costs of the streetlights to be
17 purchased. The Department noted that Commonwealth did not maintain
18 community-specific information for the depreciation reserve or early retirements.
19 The Department determined that an alternative methodology proposed by the
20 Towns was preferable because “the Towns’ method deals only with cost
21 information specific to the Towns, rather than with Company-wide data.”

1 D.T.E. 01-25, at 6. Moreover, the Department noted that Commonwealth had not
2 included Town-specific data on early retirements in its price methodology and
3 stated that “had Commonwealth provided [T]own-specific information on early
4 retirements, those costs should have been factored into the calculation of
5 [Commonwealth’s] unamortized investment in the Towns streetlights.” Id.

6 **Q. Please describe the issues addressed by the Department in D.T.E. 02-11.**

7 A. In D.T.E. 02-11, the Department ruled on a narrow question addressing how
8 Boston Edison should allocate accumulated depreciation among streetlight sub-
9 accounts when spreading the cost of specific sub-accounts to municipal and
10 private lights.

11 **Q. Are any of these issues applicable to this proceeding?**

12 A. No. As noted above, the issue regarding streetlight equipment valuation in the
13 D.T.E. 98-89 proceeding was whether a composite distribution plant depreciation
14 rate could be applied to Boston Edison’s streetlighting assets in order to determine
15 the assets’ unamortized investment. That issue is not relevant to this proceeding
16 because the Company uses, and has always used, a streetlighting-specific
17 depreciation rate. Further, the Company maintains accumulated depreciation
18 balances by sub-account. Thus, the Department’s decision in D.T.E. 98-89 is not
19 applicable to this proceeding.

1 In D.T.E. 01-25, the Department noted that Cambridge's affiliate,
2 Commonwealth, did not maintain Town-specific information relating to the
3 depreciation reserve or early retirements. However, in this case, those conditions
4 are not applicable. The City of Cambridge is the only municipality in the
5 Company's service territory. Therefore, the streetlighting cost data on the
6 Company's actual books represents only those transactions (additions,
7 retirements, depreciation, etc.) that occurred within the City. Accordingly, there
8 is no need to develop a methodology that simulates the net book value of
9 streetlights in a single town or collection of municipalities. The Company's
10 actual books provide this specific information directly.

11 In D.T.E. 02-11, the Department ruled on a narrow question addressing how
12 Boston Edison should allocate accumulated depreciation among streetlight sub-
13 accounts when spreading the cost of specific sub-accounts to municipal and
14 private lights. In the current case, the Company does not need to do the allocation
15 in question, and thus, D.T.E. 02-11 has no bearing on the proper methodology for
16 pricing Cambridge's streetlighting equipment.

17 **Q. Has a common methodology resulted from any of these cases?**

18 **A.** No. As demonstrated in the following table, the methods developed in these prior
19 proceedings are highly variable and distinct from the issues presented in this case:

1

Proceeding	Resulting Methodology
98-89	<p><i>To determine Boston Edison's unamortized investment in streetlights to be sold to Lexington and Acton, in part, by simulating the company's books for a portion of the total streetlighting equipment (for the years 1991-1997) in order to determine accumulated depreciation. Proposed unamortized investment calculation:</i></p> <ul style="list-style-type: none"> • Included estimated depreciation rates, rather than the actual composite plant distribution depreciation rates approved by the Department and reflected on the Company's books • Did not include net salvage value • Did not include transfers and adjustments
01-25	<p><i>To determine unamortized investment in streetlights to be sold to Harwich, Sandwich and Edgartown, in part, by "back calculating" depreciation over time for the total streetlighting equipment to be sold, using the costs of surviving equipment only as a source for the calculation. Proposed unamortized investment calculation:</i></p> <ul style="list-style-type: none"> • Did not include transfers and adjustments • Did not include town-specific retirement data • Did not include net salvage value
02-11	<p><i>To determine unamortized investment in streetlights to be sold to Waltham, in part, by allocating accumulated depreciation among streetlight sub-accounts when spreading the cost of specific sub-accounts to municipal and private lights. Proposed unamortized investment calculation:</i></p> <ul style="list-style-type: none"> • Did not include transfers and adjustments • Did not include net salvage value

04-65	<p><i>To determine unamortized investment in streetlights to be sold to Cambridge by taking the net book value of the streetlighting equipment from the Company's book of accounts. Proposed unamortized investment calculation:</i></p> <ul style="list-style-type: none">• includes transfers and adjustments• includes net salvage value• includes Department-approved streetlight depreciation rates
-------	--

1

2 **Q. What does this comparison demonstrate?**

3 A. The comparison demonstrates that the methodologies proposed in the previous
4 streetlight proceedings, and the Department's orders in those proceedings, were
5 based on facts specific to the municipalities and companies involved in those
6 transactions. The Department has not developed a "one size fits all" approach to
7 determining the value of streetlights under G.L. c. 164, § 34A, nor has the
8 Department previously considered the proper treatment of negative net salvage
9 costs in the valuation process. In this proceeding, the Company's books provide
10 more accurate and municipal-specific cost data for determining unamortized
11 investment relating to the equipment subject to sale than the data available in any
12 of the previous proceedings. Accordingly, the Department should rely on the
13 Company's books to determine the Company's unamortized investment in the
14 streetlighting equipment in the City subject to sale, consistent with G.L. c. 164,
15 § 34A.

1 **Q. For comparison purposes only, to the extent that the Company used in this**
2 **case the methodologies ordered by the Department to be used in prior**
3 **proceedings, what purchase price for the Company's streetlights would**
4 **result in each instance?**

5 A. In response to Information Request City-1-13, the Company provided a
6 calculation of the City's purchase price using the same method that its affiliate
7 Boston Edison used for its municipalities, similar to the methodologies used in
8 D.T.E. 98-89 and D.T.E. 02-11. The resulting purchase price is \$0.954 million
9 (see Attachment City-1-13(a), page 2 of 3 "Total City Investment"), a difference
10 of \$770,000 from the Company's \$1.724 million price in Exhibit NSTAR-1,
11 which would still need to be recovered from other customers in the City.

12 If Cambridge were required to use the same methodology as was ordered in
13 D.T.E. 01-25, the City would pay only \$0.534 million (see Exhibit NSTAR-
14 CLV-3), leaving the Company with over \$1.2 million in stranded costs that would
15 need to be recovered from other customers in the City.

16 **Q. Have costs been stranded as a result of previous orders governing the pricing**
17 **of streetlights?**

18 A. Yes. In the wake of D.T.E. 98-89, stranded costs of approximately \$200,000
19 were created (see D.T.E. 99-107, RHM Exhibit BEC-4, page 12 of 12).
20 Accordingly, if all the streetlighting equipment in Boston Edison's service
21 territory were sold to the towns as per the method in D.T.E. 98-89, Boston Edison
22 customers would likely be responsible for millions of dollars in streetlighting-

1 related stranded costs. The D.T.E. 02-11 proceeding had a similar methodology
2 to that ordered in D.T.E. 98-89, except Department approved streetlight-specific
3 depreciation rates were used.

4 With regard to the Department's decision in D.T.E. 01-25, approximately
5 \$150,000 was stranded relating to the sale of streetlighting equipment to Harwich,
6 Edgartown and Sandwich. Indeed, if all the streetlighting equipment in
7 Commonwealth's service territory as of December 31, 2000 were sold to towns
8 under the pricing formula approved by the Department in D.T.E. 01-25,
9 customers of Commonwealth would be responsible for approximately \$5.5
10 million in total stranded costs for the streetlights sold. See Exhibit NSTAR-CLV-
11 4. These are not trivial figures; they are approximately 57 percent of gross
12 investment and 138 percent of net book value.⁹

13 **Q. Why is it undesirable to require electric companies to use methodologies for**
14 **complying with G.L. c. 164, § 34A that result in stranded costs?**

15 **A.** If the Company is forced to use a pricing formula that results in a significant
16 under-recovery, the Department is then faced with a decision regarding which
17 class of customers should be required to pay for the stranded costs. The
18 Department's longstanding policies to avoid cross-subsidization where possible

⁹ See Exhibit NSTAR-CLV-4, Stranded costs as % of gross investment = $5,483 / 9,592 = 57\%$,
Stranded costs as % of net book value = $\$5,483 / 3,985 = 138\%$.

1 makes the shifting of these costs to other customer classes an undesirable result.
2 Boston Gas Company, D.T.E. 03-40, at 367-368 (2003); The Berkshire Gas
3 Company, D.T.E. 01-56, at 136-137 (2002). Although the Department has
4 recognized that the Company may address issues of under-recovery of streetlight
5 equipment costs as part of the normal ratemaking process (see D.T.E. 01-25,
6 n.12), as stated above, adopting a methodology that avoids stranded costs and that
7 requires the purchaser of streetlights to pay for the actual net book value of the
8 assets it elects to purchase is a more effective and fairer system for complying
9 with G.L. c. 164, § 34A.

10 **Q. Please summarize your testimony in this proceeding.**

11 A. In summary, for all the reasons enumerated above, the Department should find
12 that the Company's pricing methodology in this case is reasonable and
13 appropriate and further that it is reflective of the actual unamortized streetlighting
14 investment balances on the Company's books in accordance with G.L. c. 164,
15 § 34A. Accordingly, the Department should adopt the value of \$1.724 million for
16 the cost of the streetlights to be acquired by the City as set forth in Exhibit
17 NSTAR-1, adjusted to the date that the City closes on its purchase of the
18 streetlighting equipment.

19 **Q. Does this conclude your testimony?**

20 A. Yes, it does.

**Cambridge Electric Light Company
Streetlight Age**

Vintage	Age	Number of Lights (1)				Weighted Age (2)			
		City	MDC	Private	Total	City	MDC	Private	Total
Col A	Col B	Col C	Col D	Col E	Col F	Col G	Col H	Col I	Col J
1944	60		1		1	-	60	-	60
1958	46		18		18	-	828	-	828
1960	44		6		6	-	264	-	264
1964	40		1		1	-	40	-	40
1965	39		15		15	-	585	-	585
1966	38		4		4	-	152	-	152
1967	37		3		3	-	111	-	111
1968	36	2		1	3	72	-	36	108
1969	35	1	2	1	4	35	70	35	140
1970	34	1	7	1	9	34	238	34	306
1971	33	1	3		4	33	99	-	132
1972	32	10	3		13	320	96	-	416
1973	31		2	2	4	-	62	62	124
1974	30	3	8	4	15	90	240	120	450
1975	29	1	1	3	5	29	29	87	145
1976	28		10	1	11	-	280	28	308
1977	27	1	3		4	27	81	-	108
1978	26	2	7	7	16	52	182	182	416
1979	25	4	7	4	15	100	175	100	375
1980	24		4		4	-	96	-	96
1981	23	1	2	13	16	23	46	299	368
1982	22	95	3	8	106	2,090	66	176	2,332
1983	21	28	10	17	55	588	210	357	1,155
1984	20	102	9	2	113	2,040	180	40	2,260
1985	19	147	9	18	174	2,793	171	342	3,306
1986	18	20	15	21	56	360	270	378	1,008
1987	17	26	8	13	47	442	136	221	799
1988	16	36	16	27	79	576	256	432	1,264
1989	15	140	7	26	173	2,100	105	390	2,595
1990	14	534	32	22	588	7,476	448	308	8,232
1991	13	1,202	12	18	1,232	15,626	156	234	16,016
1992	12	1,028	13	28	1,069	12,336	156	336	12,828
1993	11	933	20	33	986	10,263	220	363	10,846
1994	10	301	6	22	329	3,010	60	220	3,290
1995	9	127	57	17	201	1,143	513	153	1,809
1996	8	153	27	26	206	1,224	216	208	1,648
1997	7	169	26	32	227	1,183	182	224	1,589
1998	6	101	16	50	167	606	96	300	1,002
1999	5	109	18	27	154	545	90	135	770
2000	4	74	18	22	114	296	72	88	456
2001	3	4	1		5	12	3	-	15
2002	2				-	-	-	-	-
2003	1				-	-	-	-	-
2004	0				-	-	-	-	-
Total Lights & Weighted Age		5,356	430	466	6,252	65,524	7,340	5,888	78,752
Percentage of Lights		85.67%	6.88%	7.45%	100.00%				

Average Age (Years)	12.23	17.07	12.64	12.60
Combined MDC/Private	12.23	14.76		12.60

Note 1: Number of lights from Company's Detailed Property Record System

Note 2: Weighted Age = Col B * number of lights in Col's C, D or E

Accumulated Depreciation of Street Light and Signal Systems

Exhibit NSTAR-CLV-2

Year	Additions [1]	Retirements [2]	Transfers [3]	Adjustment [4]	Balance [5]	Depreciation			Net Plant	
						Rate [6]	Annual [7]	Neg. Salvage [8]	Accumulated [9]	System [10]
inning Balance					376,009				188,005	188,005
1942	2,017	(2,979)			375,048	6.46%	24,259	(447)	208,838	166,210
1943	1,907	(14,513)		(1,036)	361,406	6.46%	23,787	(2,177)	215,936	145,470
1944	3,542	(2,943)		31	362,036	6.46%	23,367	(441)	235,919	126,117
1945	3,152	(3,528)		262	361,922	6.46%	23,384	(529)	255,245	106,677
1946	14,515	(7,941)		(1,353)	367,144	6.46%	23,549	(1,191)	269,662	97,482
1947	53,139	(26,256)		52	394,079	6.46%	24,588	(3,938)	264,055	130,024
1948	19,653	(11,840)			401,892	6.46%	25,710	(1,776)	276,149	125,743
1949	46,954	(23,882)			424,964	6.46%	26,707	(3,582)	275,392	149,572
1950	11,550	(5,015)			431,499	6.46%	27,664	(752)	297,288	134,211
1951	17,436	(7,409)			441,526	6.46%	28,199	(1,111)	316,967	124,559
1952	9,066	(3,914)			446,677	6.46%	28,689	(587)	341,154	105,523
1953	22,698	(6,880)			462,496	6.46%	29,366	(1,032)	362,608	99,887
1954	9,154	(4,062)			467,588	6.46%	30,042	(609)	387,978	79,610
1955	11,695	(5,507)			473,777	6.46%	30,406	(826)	412,052	61,725
1956	8,584	(2,536)			479,825	6.46%	30,801	(380)	439,936	39,888
1957	5,220	(2,789)	(171,432)		310,823	6.46%	25,538	(418)	462,267	(151,444)
1958	40,456	(4,314)			346,965	6.46%	21,247	(647)	478,553	(131,588)
1959	36,624	(21,227)			362,362	6.46%	22,911	(3,184)	477,053	(114,691)
1960	62,238	(17,972)			406,628	6.46%	24,838	(2,696)	481,224	(74,596)
1961	20,861	(8,262)	26,707		445,933	6.46%	27,538	(1,239)	499,260	(53,326)
1962	94,215	(28,278)	(541)		511,329	6.46%	30,920	(4,242)	497,659	13,670
1963	64,025	(27,539)			547,815	6.46%	34,210	(4,131)	500,200	47,615
1964	48,324	(19,182)	(314)		576,643	6.46%	36,320	(2,877)	514,461	62,183
1965	127,949	(38,570)	(139)		665,884	6.46%	40,134	(5,786)	510,239	155,645
1966	64,709	(16,589)			714,004	6.46%	44,570	(2,488)	535,732	178,272
1967	116,319	(57,960)			772,363	6.46%	48,010	(8,694)	517,088	255,275
1968	224,190	(102,473)	(29)		894,051	6.46%	53,825	(15,371)	453,069	440,983
1969	68,046	(31,498)	(2,470)		928,130	6.46%	58,856	(4,725)	475,703	452,427
1970	241,914	(78,484)	46	62	1,091,668	6.46%	65,239	(11,773)	450,686	640,982
1971	94,239	(37,271)	(126)		1,148,510	6.46%	72,358	(5,591)	480,182	668,328
1972	130,277	(83,486)	(170)		1,195,131	6.46%	75,700	(12,523)	459,872	735,258
1973	61,329	(31,642)		(162)	1,224,656	6.46%	78,159	(4,746)	501,643	723,013
1974	49,566	(23,357)		(103)	1,250,762	6.46%	79,956	(3,504)	554,739	696,023
1975	60,338	(45,976)	(133)		1,264,991	6.46%	81,259	(6,896)	583,125	681,866
1976	110,149	(43,468)	165,321	98,890	1,595,883	6.46%	92,406	(6,520)	625,543	970,340
1977	43,625	(19,662)	(377)		1,619,469	5.00%	80,384	(2,949)	683,316	936,153
1978	70,497	(26,493)			1,663,473	5.00%	82,074	(3,974)	734,922	928,551
1979	59,088	(22,921)	(6,402)		1,693,238	5.00%	83,918	(3,438)	792,481	900,757
1980	49,798	(20,250)			1,722,786	5.00%	85,401	(3,038)	854,594	868,192
1981	76,333	(29,361)	(179)		1,769,579	5.00%	87,309	(4,404)	908,138	861,441
1982	214,686	(64,353)			1,919,912	5.00%	92,237	(9,653)	926,369	993,543
1983	157,247	(40,634)	(747)		2,035,778	5.00%	98,892	(6,095)	978,532	1,057,246
1984	157,446	(85,224)			2,108,000	5.00%	103,594	(12,784)	984,119	1,123,881
1985	161,893	(107,586)			2,162,307	5.00%	106,758	(16,138)	967,153	1,195,154
1986	186,883	(83,641)			2,265,549	4.50%	99,627	(12,546)	970,593	1,294,956
1987	145,342	(84,803)	(26)		2,326,062	4.50%	103,311	(12,720)	976,380	1,349,682
1988	134,227	(80,141)	(1,073)		2,379,075	4.50%	105,866	(12,021)	990,084	1,388,991
1989	205,261	(93,270)			2,491,066	4.50%	109,578	(36,756)	969,636	1,521,430
1990	395,165	(240,002)	(5,259)		2,640,970	4.50%	115,471	(82,229)	762,876	1,878,094
1991	418,094	(265,551)	(199)		2,793,314	6.10%	165,746	(75,880)	587,190	2,206,123
1992	400,369	(200,499)	736		2,993,920	6.29%	182,008	(190,045)	378,655	2,615,265
1993	303,602	(186,710)			3,110,812	6.29%	191,994	(111,489)	272,450	2,838,362
1994	286,349	(102,560)	735		3,295,336	6.29%	201,473	(83,026)	288,337	3,006,999
1995	124,454	(97,501)	1,140		3,323,429	6.29%	208,160	(53,603)	345,393	2,978,036
1996	293,339	(84,166)			3,532,602	6.29%	215,622	(83,536)	393,313	3,139,289
1997	258,436	(95,372)			3,695,666	6.29%	227,329	(17,141)	508,129	3,187,536
1998	107,512	(89,988)			3,713,190	6.29%	233,009	(33,630)	617,520	3,095,670
1999	100,318	(61,105)			3,752,403	6.29%	234,793	(24,962)	766,246	2,986,157
2000	68,432	(33,293)			3,787,542	6.29%	237,131	(15,619)	954,465	2,833,077
2001	7,567	(1,754)			3,793,355	6.29%	238,419	(10,496)	1,180,634	2,612,721
2002	6,528	(4,182)			3,795,701	6.29%	238,676	(1,481)	1,413,647	2,382,054
2003	13,078	(25,200)			3,783,579	6.29%	238,368	(1,382)	1,625,433	2,158,145
mid-2004	6,539	(12,600)			3,777,518	6.29%	118,898	(22,717)	1,709,015	2,068,503

[1]-[4] Company Data (Ferc Form 1); 2003 col 2= actual retirements, 2004 = half of 2003

[5] Previous year's [5] + current year's [1] through [4]; Beginning Balance Company Data

[6] Department approved depreciation rates for for 1973, 1978, 1986, 1992 (investment-weighted average of sub-account rates)

[7] [6] × average of [5] for current and previous year

[8] Actual negative net salvage for the years 1989-2004. Prior to 1989 based on a 15% of retirements for each year. (15% Negative net Salvage approved DTE rate)

[9] Previous year's [9] + current year's [2] and [7] and [8]

[10] [5] + [9]

Cambridge Streetlights
Value using method ordered by the Department in the Com Elec Streetlight Case 01-25

Year Col. A	Account Col. B	Adds Col. C per NSTAR-2	Percent of Municipals Col. D per NSTAR-2	Municipal Adds Col. E Col. C * Col. D	Cumulative Adds Col. F Col. F Prior Year + Col. E	Average Balance Col. G Col. F Prior Year + (Col. E / 2)	Depr Rate Col. H See Note	Deprec Expense Col. I Col. G * Col. H	Accum Deprec Col. J Col. J Prior Year + Col. I	Net Plant Col. K
1943	632-ST LT OH Conductors	138	86%	119	119	59	3.98%	2	2	
1944	632-ST LT OH Conductors	0		0	119	119	3.98%	5	7	
1945	632-ST LT OH Conductors	576	86%	495	614	366	3.98%	15	22	
1946	632-ST LT OH Conductors	0		0	614	614	3.98%	24	46	
1947	632-ST LT OH Conductors	0		0	614	614	3.98%	24	71	
1948	632-ST LT OH Conductors	137	86%	117	731	673	3.98%	27	97	
1949	632-ST LT OH Conductors	0		0	731	731	3.98%	29	126	
1950	632-ST LT OH Conductors	57	86%	49	780	756	3.98%	30	156	
1951	632-ST LT OH Conductors	0		0	780	780	3.98%	31	188	
1952	632-ST LT OH Conductors	0		0	780	780	3.98%	31	219	
1953	632-ST LT OH Conductors	0		0	780	780	3.98%	31	250	
1954	632-ST LT OH Conductors	520	86%	448	1,228	1,004	3.98%	40	290	
1955	632-ST LT OH Conductors	0		0	1,228	1,228	3.98%	49	338	
1956	632-ST LT OH Conductors	0		0	1,228	1,228	3.98%	49	387	
1957	632-ST LT OH Conductors	573	86%	493	1,721	1,475	3.98%	59	446	
1958	632-ST LT OH Conductors	202	0%	0	1,721	1,721	3.98%	68	515	
1959	632-ST LT OH Conductors	740	86%	636	2,357	2,039	3.98%	81	596	
1960	632-ST LT OH Conductors	47	0%	0	2,357	2,357	3.98%	94	690	
1961	632-ST LT OH Conductors	293	86%	252	2,609	2,483	3.98%	99	788	
1962	632-ST LT OH Conductors	0		0	2,609	2,609	3.98%	104	892	
1963	632-ST LT OH Conductors	822	86%	707	3,317	2,963	3.98%	118	1,010	
1964	632-ST LT OH Conductors	0		0	3,317	3,317	3.98%	132	1,142	
1965	632-ST LT OH Conductors	181	0%	0	3,317	3,317	3.98%	132	1,274	
1966	632-ST LT OH Conductors	849	0%	0	3,317	3,317	3.98%	132	1,406	
1967	632-ST LT OH Conductors	353	0%	0	3,317	3,317	3.98%	132	1,538	
1968	632-ST LT OH Conductors	292	67%	196	3,513	3,415	3.98%	136	1,674	
1969	632-ST LT OH Conductors	478	25%	119	3,632	3,572	3.98%	142	1,816	
1970	632-ST LT OH Conductors	212	11%	23	3,655	3,644	3.98%	145	1,961	
1971	632-ST LT OH Conductors	350	25%	87	3,743	3,699	3.98%	147	2,108	
1972	632-ST LT OH Conductors	868	77%	668	4,411	4,077	3.98%	162	2,271	
1973	632-ST LT OH Conductors	1,918	0%	0	4,411	4,411	3.98%	176	2,446	
1974	632-ST LT OH Conductors	2,449	20%	490	4,901	4,656	3.98%	185	2,632	
1975	632-ST LT OH Conductors	2,668	20%	534	5,434	5,167	3.98%	206	2,837	
1976	632-ST LT OH Conductors	1,658	0%	0	5,434	5,434	3.98%	216	3,054	
1977	632-ST LT OH Conductors	774	25%	193	5,628	5,531	3.98%	220	3,274	
1978	632-ST LT OH Conductors	1,225	14%	172	5,799	5,713	4.87%	278	3,552	
1979	632-ST LT OH Conductors	599	29%	174	5,973	5,886	4.87%	287	3,839	
1980	632-ST LT OH Conductors	1,877	0%	0	5,973	5,973	4.87%	291	4,129	
1981	632-ST LT OH Conductors	500	7%	35	6,008	5,990	4.87%	292	4,421	
1982	632-ST LT OH Conductors	830	90%	747	6,755	6,381	4.87%	311	4,732	
1983	632-ST LT OH Conductors	0		0	6,755	6,755	4.87%	329	5,061	
1984	632-ST LT OH Conductors	86	90%	77	6,832	6,793	4.87%	331	5,392	
1985	632-ST LT OH Conductors	1,304	85%	1,108	7,941	7,386	4.87%	360	5,751	
1986	632-ST LT OH Conductors	500	38%	190	8,131	8,036	4.97%	399	6,151	
1987	632-ST LT OH Conductors	51	55%	28	8,158	8,145	4.97%	405	6,556	
1988	632-ST LT OH Conductors	2,974	46%	1,368	9,527	8,843	4.97%	439	6,995	
1989	632-ST LT OH Conductors	192	81%	156	9,682	9,604	4.97%	477	7,472	
1990	632-ST LT OH Conductors	27,058	91%	24,623	34,305	21,994	4.97%	1,093	8,565	
1991	632-ST LT OH Conductors	3,265	98%	3,200	37,505	35,905	4.97%	1,784	10,350	
1992	632-ST LT OH Conductors	0		0	37,505	37,505	5.90%	2,213	12,563	
1993	632-ST LT OH Conductors	100	95%	95	37,600	37,553	5.90%	2,216	14,778	
1994	632-ST LT OH Conductors	751	91%	683	38,283	37,942	5.90%	2,239	17,017	
1995	632-ST LT OH Conductors	133	63%	84	38,367	38,325	5.90%	2,261	19,278	
1996	632-ST LT OH Conductors	1,166	74%	863	39,230	38,798	5.90%	2,289	21,567	
1997	632-ST LT OH Conductors	312	74%	231	39,460	39,345	5.90%	2,321	23,889	
1998	632-ST LT OH Conductors	342	63%	215	39,676	39,568	5.90%	2,335	26,223	
1999	632-ST LT OH Conductors	30	75%	23	39,698	39,687	5.90%	2,342	28,565	
2000	632-ST LT OH Conductors	0		0	39,698	39,698	6.29%	2,497	31,062	
2001	632-ST LT OH Conductors	0		0	39,698	39,698	6.29%	2,497	33,559	
2002	632-ST LT OH Conductors	3,605	86%	3,101	42,799	41,248	6.29%	2,595	36,153	
2003	632-ST LT OH Conductors	2,754	86%	2,368	45,167	43,983	6.29%	2,767	38,920	
Total 632 account as of Dec. 31, 2003		66,809			45,167				38,920	6,247

Cambridge Streetlights
Value using method ordered by the Department in the Com Elec Streetlight Case 01-25

Year	Account	Adds	Percent of	Municipal	Cumulative	Average	Depr	Deprec	Accum	Net
Col. A	Col. B	Col. C	Municipals	Adds	Adds	Balance	Rate	Expense	Deprec	Plant
		Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K
		per NSTAR-2	per NSTAR-2	Col. C * Col. D	Col. F Prior Year + Col. E	Col. F Prior Year + (Col. E / 2)	See Note	Col. G * Col. H	Col. J Prior Year + Col. I	
1944	633-ST LT UG Conduit	20,552	0%	0	0	0	2.22%	0	1	
1945	633-ST LT UG Conduit	79	86%	68	68	34	2.22%	1	2	
1946	633-ST LT UG Conduit	380	86%	327	395	232	2.22%	5	7	
1947	633-ST LT UG Conduit	9,218	86%	7,928	8,323	4,359	2.22%	97	104	
1948	633-ST LT UG Conduit	5,093	86%	4,380	12,702	10,513	2.22%	233	337	
1949	633-ST LT UG Conduit	8,210	86%	7,060	19,763	16,233	2.22%	360	698	
1950	633-ST LT UG Conduit	969	86%	834	20,596	20,180	2.22%	448	1,146	
1951	633-ST LT UG Conduit	4,491	86%	3,862	24,458	22,527	2.22%	500	1,646	
1952	633-ST LT UG Conduit	503	86%	433	24,891	24,675	2.22%	548	2,193	
1953	633-ST LT UG Conduit	995	86%	855	25,746	25,319	2.22%	562	2,755	
1954	633-ST LT UG Conduit	1,218	86%	1,047	26,794	26,270	2.22%	583	3,339	
1955	633-ST LT UG Conduit	508	86%	437	27,231	27,012	2.22%	600	3,938	
1956	633-ST LT UG Conduit	431	86%	371	27,602	27,416	2.22%	609	4,547	
1957	633-ST LT UG Conduit	138	86%	119	27,720	27,661	2.22%	614	5,161	
1958	633-ST LT UG Conduit	328	0%	0	27,720	27,720	2.22%	615	5,776	
1959	633-ST LT UG Conduit	945	86%	813	28,533	28,127	2.22%	624	6,401	
1960	633-ST LT UG Conduit	4,840	0%	0	28,533	28,533	2.22%	633	7,034	
1961	633-ST LT UG Conduit	3,135	86%	2,696	31,229	29,881	2.22%	663	7,698	
1962	633-ST LT UG Conduit	34,495	86%	29,666	60,895	46,062	2.22%	1,023	8,720	
1963	633-ST LT UG Conduit	10,875	86%	9,352	70,248	65,571	2.22%	1,456	10,176	
1964	633-ST LT UG Conduit	5,219	0%	0	70,248	70,248	2.22%	1,559	11,735	
1965	633-ST LT UG Conduit	21,593	0%	0	70,248	70,248	2.22%	1,559	13,295	
1966	633-ST LT UG Conduit	11,400	0%	0	70,248	70,248	2.22%	1,559	14,854	
1967	633-ST LT UG Conduit	19,420	0%	0	70,248	70,248	2.22%	1,559	16,414	
1968	633-ST LT UG Conduit	21,717	67%	14,551	84,798	77,523	2.22%	1,721	18,135	
1969	633-ST LT UG Conduit	5,251	25%	1,313	86,111	85,454	2.22%	1,897	20,032	
1970	633-ST LT UG Conduit	63,799	11%	7,018	93,129	89,620	2.22%	1,990	22,022	
1971	633-ST LT UG Conduit	19,194	25%	4,799	97,927	95,528	2.22%	2,121	24,142	
1972	633-ST LT UG Conduit	12,593	77%	9,697	107,624	102,776	2.22%	2,282	26,424	
1973	633-ST LT UG Conduit	838	0%	0	107,624	107,624	2.22%	2,389	28,813	
1974	633-ST LT UG Conduit	2,731	20%	546	108,170	107,897	2.22%	2,395	31,208	
1975	633-ST LT UG Conduit	10,005	20%	2,001	110,171	109,171	2.22%	2,424	33,632	
1976	633-ST LT UG Conduit	7,056	0%	0	110,171	110,171	2.22%	2,446	36,078	
1977	633-ST LT UG Conduit	1,318	25%	330	110,501	110,336	2.22%	2,449	38,527	
1978	633-ST LT UG Conduit	4,250	14%	595	111,096	110,798	2.18%	2,415	40,943	
1979	633-ST LT UG Conduit	1,566	29%	454	111,550	111,323	2.18%	2,427	43,370	
1980	633-ST LT UG Conduit	1,875	0%	0	111,550	111,550	2.18%	2,432	45,801	
1981	633-ST LT UG Conduit	33	7%	2	111,552	111,551	2.18%	2,432	48,233	
1982	633-ST LT UG Conduit	13,457	90%	12,112	123,664	117,608	2.18%	2,564	50,797	
1983	633-ST LT UG Conduit	2,746	51%	1,401	125,065	124,364	2.18%	2,711	53,508	
1984	633-ST LT UG Conduit	12,921	90%	11,629	136,694	130,879	2.18%	2,853	56,361	
1985	633-ST LT UG Conduit	11,042	85%	9,386	146,079	141,387	2.18%	3,082	59,444	
1986	633-ST LT UG Conduit	18,876	38%	7,173	153,252	149,666	2.48%	3,712	63,155	
1987	633-ST LT UG Conduit	6,134	55%	3,373	156,626	154,939	2.48%	3,842	66,998	
1988	633-ST LT UG Conduit	6,767	46%	3,113	159,738	158,182	2.48%	3,923	70,921	
1989	633-ST LT UG Conduit	10,071	81%	8,157	167,896	163,817	2.48%	4,063	74,983	
1990	633-ST LT UG Conduit	24,469	91%	22,267	190,162	179,029	2.48%	4,440	79,423	
1991	633-ST LT UG Conduit	1,795	98%	1,759	191,921	191,042	2.48%	4,738	84,161	
1992	633-ST LT UG Conduit	0		0	191,921	191,921	3.24%	6,218	90,379	
1993	633-ST LT UG Conduit	4,606	95%	4,375	196,296	194,109	3.24%	6,289	96,668	
1994	633-ST LT UG Conduit	16,296	91%	14,829	211,126	203,711	3.24%	6,600	103,269	
1995	633-ST LT UG Conduit	3,598	63%	2,267	213,393	212,259	3.24%	6,877	110,146	
1996	633-ST LT UG Conduit	23,234	74%	17,193	230,586	221,989	3.24%	7,192	117,338	
1997	633-ST LT UG Conduit	6,347	74%	4,696	235,282	232,934	3.24%	7,547	124,885	
1998	633-ST LT UG Conduit	8,036	63%	5,063	240,345	237,813	3.24%	7,705	132,591	
1999	633-ST LT UG Conduit	5,166	75%	3,875	244,219	242,282	3.24%	7,850	140,440	
2000	633-ST LT UG Conduit	122	65%	79	244,298	244,259	6.29%	15,364	155,804	
2001	633-ST LT UG Conduit	0		0	244,298	244,298	6.29%	15,366	171,171	
2002	633-ST LT UG Conduit	2,404	86%	2,067	246,365	245,332	6.29%	15,431	186,602	
2003	633-ST LT UG Conduit	1,210	86%	1,041	247,406	246,886	6.29%	15,529	202,131	
Total 633 Account as of Dec. 31, 2003		496,558			247,406				202,131	45,275

Cambridge Streetlights
Value using method ordered by the Department in the Com Elec Streetlight Case 01-25

Year	Account	Adds	Percent of	Municipal	Cumulative	Average	Depr	Deprec	Accum	Net
Col. A	Col. B	Col. C	Municipals	Adds	Adds	Balance	Rate	Expense	Deprec	Plant
		per NSTAR-2	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K
			per NSTAR-2	Col. C * Col. D	Col. F Prior Year + Col. E	Col. F Prior Year + Col. E / 2	See Note	Col. G * Col. H	Col. J Prior Year + Col. I	
1943	634-ST LT UG Conductors	6	86%	6	6	3	2.50%	0	0	
1944	634-ST LT UG Conductors	21,280	0%	0	6	6	2.50%	0	0	
1945	634-ST LT UG Conductors	316	86%	272	278	142	2.50%	4	4	
1946	634-ST LT UG Conductors	1,885	86%	1,621	1,898	1,088	2.50%	27	31	
1947	634-ST LT UG Conductors	8,312	86%	7,149	9,047	5,473	2.50%	137	168	
1948	634-ST LT UG Conductors	5,702	86%	4,904	13,951	11,499	2.50%	287	455	
1949	634-ST LT UG Conductors	4,301	86%	3,699	17,650	15,800	2.50%	395	850	
1950	634-ST LT UG Conductors	906	86%	779	18,429	18,039	2.50%	451	1,301	
1951	634-ST LT UG Conductors	3,500	86%	3,010	21,439	19,934	2.50%	498	1,800	
1952	634-ST LT UG Conductors	460	86%	396	21,835	21,637	2.50%	541	2,341	
1953	634-ST LT UG Conductors	3,018	86%	2,596	24,431	23,133	2.50%	578	2,919	
1954	634-ST LT UG Conductors	1,943	86%	1,671	26,102	25,266	2.50%	632	3,550	
1955	634-ST LT UG Conductors	2,854	86%	2,455	28,556	27,329	2.50%	683	4,234	
1956	634-ST LT UG Conductors	2,684	86%	2,308	30,864	29,710	2.50%	743	4,976	
1957	634-ST LT UG Conductors	1,675	86%	1,441	32,305	31,585	2.50%	790	5,766	
1958	634-ST LT UG Conductors	6,231	0%	0	32,305	32,305	2.50%	808	6,574	
1959	634-ST LT UG Conductors	704	86%	605	32,910	32,608	2.50%	815	7,389	
1960	634-ST LT UG Conductors	6,774	0%	0	32,910	32,910	2.50%	823	8,212	
1961	634-ST LT UG Conductors	1,102	86%	948	33,858	33,384	2.50%	835	9,046	
1962	634-ST LT UG Conductors	4,311	86%	3,707	37,565	35,712	2.50%	893	9,939	
1963	634-ST LT UG Conductors	1,943	86%	1,671	39,236	38,401	2.50%	960	10,899	
1964	634-ST LT UG Conductors	1,983	0%	0	39,236	39,236	2.50%	981	11,880	
1965	634-ST LT UG Conductors	16,133	0%	0	39,236	39,236	2.50%	981	12,861	
1966	634-ST LT UG Conductors	3,516	0%	0	39,236	39,236	2.50%	981	13,842	
1967	634-ST LT UG Conductors	4,571	0%	0	39,236	39,236	2.50%	981	14,823	
1968	634-ST LT UG Conductors	7,147	67%	4,788	44,024	41,630	2.50%	1,041	15,863	
1969	634-ST LT UG Conductors	2,228	25%	557	44,581	44,303	2.50%	1,108	16,971	
1970	634-ST LT UG Conductors	18,837	11%	2,072	46,653	45,617	2.50%	1,140	18,111	
1971	634-ST LT UG Conductors	8,950	25%	2,237	48,891	47,772	2.50%	1,194	19,306	
1972	634-ST LT UG Conductors	5,757	77%	4,433	53,324	51,107	2.50%	1,278	20,583	
1973	634-ST LT UG Conductors	1,233	0%	0	53,324	53,324	2.50%	1,333	21,916	
1974	634-ST LT UG Conductors	6,300	20%	1,260	54,584	53,954	2.50%	1,349	23,265	
1975	634-ST LT UG Conductors	2,758	20%	552	55,135	54,860	2.50%	1,371	24,637	
1976	634-ST LT UG Conductors	15,506	0%	0	55,135	55,135	2.50%	1,378	26,015	
1977	634-ST LT UG Conductors	1,293	25%	323	55,459	55,297	2.50%	1,382	27,398	
1978	634-ST LT UG Conductors	6,560	14%	918	56,377	55,918	2.48%	1,387	28,784	
1979	634-ST LT UG Conductors	6,385	29%	1,852	58,229	57,303	2.48%	1,421	30,206	
1980	634-ST LT UG Conductors	5,660	0%	0	58,229	58,229	2.48%	1,444	31,650	
1981	634-ST LT UG Conductors	1,760	7%	123	58,352	58,290	2.48%	1,446	33,095	
1982	634-ST LT UG Conductors	53,376	90%	48,038	106,390	82,371	2.48%	2,043	35,138	
1983	634-ST LT UG Conductors	34,501	51%	17,596	123,986	115,188	2.48%	2,857	37,995	
1984	634-ST LT UG Conductors	8,066	90%	7,260	131,245	127,615	2.48%	3,165	41,160	
1985	634-ST LT UG Conductors	8,024	85%	6,820	138,065	134,655	2.48%	3,339	44,499	
1986	634-ST LT UG Conductors	12,712	38%	4,831	142,896	140,481	2.74%	3,849	48,348	
1987	634-ST LT UG Conductors	17,296	55%	9,513	152,409	147,653	2.74%	4,046	52,394	
1988	634-ST LT UG Conductors	2,422	46%	1,114	153,523	152,966	2.74%	4,191	56,585	
1989	634-ST LT UG Conductors	19,478	81%	15,778	169,301	161,412	2.74%	4,423	61,008	
1990	634-ST LT UG Conductors	19,490	91%	17,736	187,037	178,169	2.74%	4,882	65,890	
1991	634-ST LT UG Conductors	10,596	98%	10,384	197,421	192,229	2.74%	5,267	71,157	
1992	634-ST LT UG Conductors	4,888	96%	4,693	202,113	199,767	3.73%	7,451	78,608	
1993	634-ST LT UG Conductors	1,619	95%	1,538	203,652	202,882	3.73%	7,568	86,175	
1994	634-ST LT UG Conductors	8,120	91%	7,390	211,041	207,346	3.73%	7,734	93,910	
1995	634-ST LT UG Conductors	2,690	63%	1,695	212,736	211,888	3.73%	7,903	101,813	
1996	634-ST LT UG Conductors	18,545	74%	13,723	226,459	219,597	3.73%	8,191	110,004	
1997	634-ST LT UG Conductors	6,557	74%	4,852	231,311	228,885	3.73%	8,537	118,541	
1998	634-ST LT UG Conductors	491	63%	309	231,620	231,466	3.73%	8,634	127,175	
1999	634-ST LT UG Conductors	5,694	75%	4,271	235,891	233,755	3.73%	8,719	135,894	
2000	634-ST LT UG Conductors	2,106	65%	1,369	237,260	236,575	6.29%	14,881	150,775	
2001	634-ST LT UG Conductors	0		0	237,260	237,260	6.29%	14,924	165,698	
2002	634-ST LT UG Conductors	(4,228)	86%	-3,636	233,624	235,442	6.29%	14,809	180,508	
2003	634-ST LT UG Conductors	0		0	233,624	233,624	6.29%	14,695	195,203	
Total 634 Account as of Dec. 31, 2002		428,929			233,624				195,203	38,421

Cambridge Streetlights
Value using method ordered by the Department in the Com Elec Streetlight Case 01-25

Year Col. A	Account Col. B	Adds Col. C per NSTAR-2	Percent of Municipals Col. D per NSTAR-2	Municipal Adds Col. E Col. C * Col. D	Cumulative Adds Col. F Col. F Prior Year + Col. E	Average Balance Col. G Col. F Prior Year + (Col. E / 2)	Depr Rate Col. H See Note	Deprec Expense Col. I Col. G * Col. H	Accum Deprec Col. J Col. J Prior Year + Col. I	Net Plant Col. K
1943	635-Municipal Posts, Fix & Lum			0	0	0	7.95%	0	46	
1944	635-Municipal Posts, Fix & Lum	24	0%	0	0	0	7.95%	0	46	
1945	635-Municipal Posts, Fix & Lum			0	0	0	7.95%	0	46	
1946	635-Municipal Posts, Fix & Lum			0	0	0	7.95%	0	46	
1947	635-Municipal Posts, Fix & Lum	1,459	86%	1,254	1,254	627	7.95%	50	96	
1948	635-Municipal Posts, Fix & Lum	5,400	86%	4,644	5,898	3,576	7.95%	284	380	
1949	635-Municipal Posts, Fix & Lum	1,467	86%	1,262	7,160	6,529	7.95%	519	899	
1950	635-Municipal Posts, Fix & Lum	1,787	86%	1,537	8,697	7,929	7.95%	630	1,529	
1951	635-Municipal Posts, Fix & Lum	2,605	86%	2,240	10,937	9,817	7.95%	780	2,310	
1952	635-Municipal Posts, Fix & Lum	79	86%	68	11,005	10,971	7.95%	872	3,182	
1953	635-Municipal Posts, Fix & Lum	8,180	86%	7,035	18,040	14,522	7.95%	1,155	4,337	
1954	635-Municipal Posts, Fix & Lum	546	86%	470	18,509	18,275	7.95%	1,453	5,789	
1955	635-Municipal Posts, Fix & Lum	455	86%	391	18,901	18,705	7.95%	1,487	7,276	
1956	635-Municipal Posts, Fix & Lum	2,602	86%	2,238	21,139	20,020	7.95%	1,592	8,868	
1957	635-Municipal Posts, Fix & Lum			0	21,139	21,139	7.95%	1,681	10,549	
1958	635-Municipal Posts, Fix & Lum	11,892	0%	0	21,139	21,139	7.95%	1,681	12,229	
1959	635-Municipal Posts, Fix & Lum	1,866	86%	1,605	22,744	21,941	7.95%	1,744	13,973	
1960	635-Municipal Posts, Fix & Lum	11,560	0%	0	22,744	22,744	7.95%	1,808	15,782	
1961	635-Municipal Posts, Fix & Lum	828	86%	712	23,456	23,100	7.95%	1,836	17,618	
1962	635-Municipal Posts, Fix & Lum	5,279	86%	4,540	27,996	25,726	7.95%	2,045	19,663	
1963	635-Municipal Posts, Fix & Lum	5,199	86%	4,471	32,467	30,231	7.95%	2,403	22,067	
1964	635-Municipal Posts, Fix & Lum	4,017	0%	0	32,467	32,467	7.95%	2,581	24,648	
1965	635-Municipal Posts, Fix & Lum	24,642	0%	0	32,467	32,467	7.95%	2,581	27,229	
1966	635-Municipal Posts, Fix & Lum	7,056	0%	0	32,467	32,467	7.95%	2,581	29,810	
1967	635-Municipal Posts, Fix & Lum	11,604	0%	0	32,467	32,467	7.95%	2,581	32,391	
1968	635-Municipal Posts, Fix & Lum	11,407	67%	7,643	40,110	36,288	7.95%	2,885	35,276	
1969	635-Municipal Posts, Fix & Lum	1,359	25%	340	40,449	40,279	7.95%	3,202	38,478	
1970	635-Municipal Posts, Fix & Lum	7,471	11%	822	41,271	40,860	7.95%	3,248	41,727	
1971	635-Municipal Posts, Fix & Lum	2,403	25%	601	41,872	41,572	7.95%	3,305	45,032	
1972	635-Municipal Posts, Fix & Lum	1,477	77%	1,137	43,009	42,440	7.95%	3,374	48,406	
1973	635-Municipal Posts, Fix & Lum	1,635	0%	0	43,009	43,009	7.95%	3,419	51,825	
1974	635-Municipal Posts, Fix & Lum	7,719	20%	1,544	44,553	43,781	7.95%	3,481	55,305	
1975	635-Municipal Posts, Fix & Lum	4,253	20%	851	45,403	44,978	7.95%	3,576	58,881	
1976	635-Municipal Posts, Fix & Lum	22,399	0%	0	45,403	45,403	7.95%	3,610	62,491	
1977	635-Municipal Posts, Fix & Lum	5,640	25%	1,410	46,813	46,108	7.95%	3,666	66,156	
1978	635-Municipal Posts, Fix & Lum	11,350	14%	1,589	48,402	47,608	6.59%	3,137	69,294	
1979	635-Municipal Posts, Fix & Lum	12,648	29%	3,668	52,070	50,236	6.59%	3,311	72,604	
1980	635-Municipal Posts, Fix & Lum	5,993	0%	0	52,070	52,070	6.59%	3,431	76,036	
1981	635-Municipal Posts, Fix & Lum	8,816	7%	617	52,687	52,379	6.59%	3,452	79,487	
1982	635-Municipal Posts, Fix & Lum	48,813	90%	43,931	96,619	74,653	6.59%	4,920	84,407	
1983	635-Municipal Posts, Fix & Lum	35,901	51%	18,310	114,928	105,773	6.59%	6,970	91,377	
1984	635-Municipal Posts, Fix & Lum	34,417	90%	30,975	145,904	130,416	6.59%	8,594	99,972	
1985	635-Municipal Posts, Fix & Lum	55,096	85%	46,831	192,735	169,319	6.59%	11,158	111,130	
1986	635-Municipal Posts, Fix & Lum	49,902	38%	18,963	211,698	202,217	5.46%	11,041	122,171	
1987	635-Municipal Posts, Fix & Lum	47,750	55%	26,263	237,961	224,829	5.46%	12,276	134,447	
1988	635-Municipal Posts, Fix & Lum	54,580	46%	25,107	263,068	250,514	5.46%	13,678	148,125	
1989	635-Municipal Posts, Fix & Lum	90,528	81%	73,327	336,395	299,731	5.46%	16,365	164,490	
1990	635-Municipal Posts, Fix & Lum	205,180	91%	186,714	523,109	429,752	5.46%	23,464	187,955	
1991	635-Municipal Posts, Fix & Lum	336,058	98%	329,337	852,446	687,778	5.46%	37,553	225,507	
1992	635-Municipal Posts, Fix & Lum	345,337	96%	331,524	1,183,970	1,018,208	7.27%	74,024	299,531	
1993	635-Municipal Posts, Fix & Lum	258,262	95%	245,349	1,429,319	1,306,644	7.27%	94,993	394,524	
1994	635-Municipal Posts, Fix & Lum	233,755	91%	212,717	1,642,036	1,535,678	7.27%	111,644	506,168	
1995	635-Municipal Posts, Fix & Lum	83,742	63%	52,758	1,694,794	1,668,415	7.27%	121,294	627,462	
1996	635-Municipal Posts, Fix & Lum	219,463	74%	162,402	1,857,196	1,775,995	7.27%	129,115	756,576	
1997	635-Municipal Posts, Fix & Lum	213,906	74%	158,290	2,015,486	1,936,341	7.27%	140,772	897,348	
1998	635-Municipal Posts, Fix & Lum	77,108	63%	48,578	2,064,064	2,039,775	7.27%	148,292	1,045,640	
1999	635-Municipal Posts, Fix & Lum	81,540	75%	61,155	2,125,219	2,094,642	7.27%	152,280	1,197,920	
2000	635-Municipal Posts, Fix & Lum	54,336	65%	35,318	2,160,538	2,142,879	6.29%	134,787	1,332,708	
2001	635-Municipal Posts, Fix & Lum	4,657	80%	3,725	2,164,263	2,168,040	6.29%	136,015	1,468,723	
2002	635-Municipal Posts, Fix & Lum	8,783	86%	7,553	2,171,816	2,171,816	6.29%	136,370	1,605,092	
2003	635-Municipal Posts, Fix & Lum (Note)	16,803	86%	14,450	2,186,267	2,179,041	6.29%	137,062	1,742,154	
Total 635 Account as of Dec 31, 2003		2,769,033			2,186,267				1,742,154	444,113
Sum of totals for 632, 633, 634, 635		3,761,329			2,712,463				2,178,407	534,056

Cambridge Streetlights
Value using method ordered by the Department in the Com Elec Streetlight Case 01-25

Year	Account	Adds	Percent of	Municipal	Cumulative	Average	Depr	Deprec	Accum	Net
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. G	Col. H	Col. I	Col. J	Col. K
		per NSTAR-2	per NSTAR-2	Col. C * Col. D	Col. F Prior Year + Col. E	Col. F Prior Year + (Col. E / 2)	See Note	Col. G * Col. H	Col. J Prior Year + Col. I	

Note:

	Depreciation Study Year			
Sub-Account	1973	1978	1986	1992
635-Municipal Posts, Fix & Lum	7.95	6.59	5.46	7.27
632-ST LT OH Conductors	3.98	4.87	4.97	5.90
633-ST LT UG Conduit	2.22	2.18	2.48	3.24
634-ST LT UG Conductors	2.50	2.48	2.74	3.73
Investment weighted composite	6.46	5.00	4.50	6.14

From 2000 onwards, with the installation of new accounting software, only investment weighted composite of 6.29% was used
This was based on the investment weights at the time.

Note: Account 635 Additions in 2003 includes \$367.95 recorded in account 636.

Commonwealth Electric Street Lights
Comparison of Net Value with 01-25 method and Actual Book Value
As of December 31, 2000
(Dollars in Thousands)

	Col A	Col B	Col C	Col D	Col E	Col F
	<u>Cummulative</u>					
<u>Vintage</u>	<u>Additions</u>	<u>Additions</u>	<u>Ave Bal</u>	<u>Rate</u>	<u>Depr Expense</u>	<u>Net Value</u>
1936	\$2	\$2	\$1	0.0802	\$0	
1937	0	2	2	0.0802	0	
1938	0	2	2	0.0802	0	
1939	0	2	2	0.0802	0	
1940	0	2	2	0.0802	0	
1941	2	4	3	0.0802	0	
1942	2	6	5	0.0802	0	
1943	0	6	6	0.0802	0	
1944	14	20	13	0.0802	1	
1945	0	20	20	0.0802	2	
1946	0	20	20	0.0802	2	
1947	0	20	20	0.0802	2	
1948	0	20	20	0.0802	2	
1949	3	23	22	0.0802	2	
1950	2	25	24	0.0802	2	
1951	2	27	26	0.0802	2	
1952	2	29	28	0.0802	2	
1953	0	29	29	0.0802	2	
1954	2	31	30	0.0802	2	
1955	6	37	34	0.0802	3	
1956	13	50	44	0.0802	3	
1957	6	56	53	0.0802	4	
1958	15	71	64	0.0802	5	
1959	5	76	74	0.0802	6	
1960	8	84	80	0.0802	6	
1961	11	95	90	0.0802	7	
1962	8	103	99	0.0802	8	
1963	8	111	107	0.0802	9	
1964	8	119	115	0.0802	9	
1965	8	127	123	0.0802	10	
1966	18	145	136	0.0802	11	
1967	22	167	156	0.0802	13	
1968	7	174	171	0.0802	14	
1969	10	184	179	0.0802	14	
1970	18	202	193	0.0802	15	
1971	31	233	218	0.0802	17	
1972	32	265	249	0.0802	20	
1973	34	299	282	0.0802	23	
1974	21	320	310	0.0802	25	
1975	36	356	338	0.0802	27	
1976	95	451	404	0.0802	32	
1977	141	592	522	0.0802	42	
1978	239	831	712	0.0802	57	
1979	309	1,140	986	0.0802	79	
1980	374	1,514	1,327	0.0822	109	
1981	467	1,981	1,748	0.0822	144	
1982	287	2,268	2,125	0.0822	175	
1983	285	2,553	2,411	0.0822	198	
1984	215	2,768	2,661	0.0822	219	
1985	225	2,993	2,881	0.0822	237	
1986	329	3,322	3,158	0.0822	260	
1987	389	3,711	3,517	0.0822	289	
1988	636	4,347	4,029	0.0822	331	
1989	1,619	5,966	5,157	0.0814	420	
1990	376	6,342	6,164	0.0814	501	
1991	453	6,795	6,569	0.0829	610	
1992	296	7,091	6,943	0.0961	667	
1993	258	7,349	7,220	0.0961	694	
1994	336	7,685	7,517	0.0961	722	
1995	322	8,007	7,846	0.0961	754	
1996	411	8,418	8,213	0.0961	789	
1997	308	8,726	8,572	0.0961	824	
1998	463	9,189	8,958	0.0961	861	
1999	307	9,496	9,343	0.0961	898	
2000	96	9,592	9,544	0.0961	917	
Totals	\$9,592				\$11,100	-\$1,508
Per Books (Dec. 31/2000)	\$9,592				\$5,607	\$3,985
Variance	\$0				-\$5,493	\$5,493

(A) Original cost of vintage surviving as of Dec. 31st, 2000 from Company records
Includes all equipment for all towns

(B) Prior year Col B + Col A current year

(C) Average of prior year Col B + current year Col B

(D) Commonwealth depreciation rates - approved rates since 1977 (Source 01-25, discovery CLC-1-1)
Prior to 1977, depreciation rate of 8.02% assumed to apply from 1936 to 1977

(E) Col C * Col D

(F) Net Book Value as of Dec. 31st 2000 = Total original cost of all surviving equipment (total Col A)
less total depreciation associated with surviving equipment (total Col E)